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An Evaluation of Elementary Teacher Candidates' Environmental Approaches, Environmental Risk Perceptions and Environmental Behaviours

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Abstract

The purpose of this research is to determine elementary teacher candidates' environmental approaches (environmental-based or human-based), environmental risk perceptions and environmental behaviours. Furthermore this research intend to determine if there is a significant difference in elementary teacher candidates' environment-centered or human-centered approaches, environmental risk perceptions and environmental behaviours according to the variables of gender and class, or not. The research was carried out with a total of 243 teacher candidates (131male and 112 female) from Elementary Department of Faculty of Education at Siirt University in Turkey. It was used the "*New Environmental Paradigms Scale*", which was first time developed by Dunlap and Van Liere (1978) and revised by Dunlap et.al. (2000) and adapted into Turkish by Furman (1998), to determine the environmental approaches of the teacher candidates, the "*Environmental Risk Perceptions Scale*", which was developed by Slimak and Dietz (2006) and adapted into Turkish by Altunoğlu and Atav (2009), was used to determine the teacher candidates' perceptions of environmental risk and it was used "*Environmental Behaviour Scale*", which was developed by Uzun and Sağlam (2006), to determine their environmental behaviours. At the analysis of data; it was consulted from descriptive statistical techniques and Pearson Moment Correlation coefficient. In our research, it was calculated that the Cronbach alpha reliability coefficient of environmental approaches scale as .65 , the scale of environmental risk perceptions as .93 and the scale of environmental behavior as .85. As a result of this research, it was found that the teachers candidates' environmental-centered approach mean score (M=4.21) is higher than human-centered approach mean score (M=3.35). Moreover, it was found that there is a significant and positive relation between the elementary teacher candidates' human-centered approaches, environmental risk perceptions ($r= .41$; $p<0.01$) and environmental behaviours ($r= .20$; $p< 0.01$).

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Keywords: Environmental paradigms, environmental risk perceptions, environmental behaviors, elementary teacher candidates.

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1. Introduction

It requires the individuals to be aware of the environment and environmental problems, in order to understand the features of the environment and its problems, to bring suggestions of solution and to live in peace with nature and the other living. It is presumed that the first creature in our world existed approximately a billion years ago, as the first members of the human family was started to be seen 5 million years ago. Fossils show that "Homo Sapiens" exist in this world only for 40.000 years, and this time covers only a very small period of the of 4-5 billion years of our world's existence time. Humanity has experienced two great cultural changes during this development progress of 40.000 years. First of these was the agricultural revolution , which started 9.000- 11.000 years ago and second one is the industrial revolution 250 years ago. Since the first days of its appearance in the nature to our day, humanity continued its life with hunting and salvaging and lived on without causing any serious environmental problems. However the damage of last two centuries caused by humanity to our 5 Billion years old planet has recently reached to such a treating dimension that it can extinct hundreds of plant and animal species. Global warming, ozone layer depletion, acidic rains, drains of the lakes and rivers and deforestation is only a couple of our problems. In parallel with the cover of the environmental problems and the increase of their efficiency, the political, economical, scientific and artistic concern on environmental problems also increase. As new branches like environment philosophy, environmental ethics, environmental education, environmental psychology, environmental sociology improve, social subjects; ecologic culture, ecologic agriculture, ecologic tourism and ecologic society is being discussed more often by media and science societies. The way of individuals' thinking about the outer world surrounding them is important from the aspect of validating their environmental manners, behaviours and values and for bringing an explanation to their role in this structure (Ponting, 2000). One of the in all societies existing basic research subject is the relation between the humanity and the outer world (nature). Views "If the human is different from or even superior to the nature" (anthropoentrism) or "If the human is an integral part of the nature" (ecocentrism) bear a significant importance in formation of the environmental values and manners (Tuna, 2006). On the other hand, recent studies show that the individuals are aware of and worried about the environmental problems and risks (Riechard and Peterson, 1998; Wals-Daneshmandii and Maclachlan, 2000; 2006; Slimak and Dietz 2006; Gürsoy et. al., 2008). Humans are reacting against to themselves threat posing environmental problems in direction with their perceptions. Lowness of the environmental risk perceptions of the individuals causes to low or misresulting of their endeavour for preserving the society and environment. According to Baldasarre and Katz (1992), environmental risk perceptions of individuals play a significant role in forming and strengthening environmental problems sensitive manners. Additionally environmental problems are waiting upon global solutions in the use of the natural sources, social, financial and political, flora and fauna, climatic, natural and anthropogenic diseases dimensions. The first step to prevent the environmental problems is indicates as, to understand the nature-human interaction, to perceive the contribution of the humanity in formation of the environmental problems, shortly to reach the "environmental conscience" and "environmental sensitivity". Şahin, Cerrah and Saka (2004) have stated that growing environment-sensitive individuals for securing the next generations and more healthy and safe environment became an obligation. Providing this will be possible only with environmental training. In other words, environmental training besides general education seems one of the best ways to make people aware of their responsibilities and to secure their contribution to the solutions for the environmental problems they caused. Being effective significantly in environmental training, in this step revealing teachers' approaches for environment and environmental problems, environmental risk perception and behaviours against the environment is important.

The purpose of this study is to show the environmental approaches (anthropocentric and ecocentric), environmental perceptions and environmental behaviours of teacher candidates. In accordance with this, answers for the following questions we sought:

1. How are the environmental approaches (anthropocentric and ecocentric), environmental risk perception and environmental behaviours of teacher candidates?
2. Are there any differences between the environmental approaches (anthropocentric and ecocentric), environmental risk perception and environmental behaviours and gender variability of teacher candidates?
3. Are there any differences between the environmental approaches (anthropocentric and ecocentric), environmental risk perception and environmental behaviours and class variability of teacher candidates?
4. How are the environmental approaches (anthropocentric and ecocentric), environmental risk perception and environmental behaviours of teacher candidates and what kind of relation lies between them?

2. Method

2.1. Participants

The study was conducted in the spring of 2009-2010 academic year at Siirt University in Turkey. Participants were 243 teacher candidates who were attending at Elementary Departments in Faculty of Education. Samples of the study is consisted by total 243 teacher candidates divided as 112 female and 131 male with random sample method.

2.2. Data Collection

The data in this study was gathered with a questionnaire, which consists of four parts. Personal fact sheet prepared by the researcher takes place in first part, in second part new environmental paradigm example for identifying the environmental approaches of teacher candidates, in third part environmental risk perception scale and finally in fourth part environmental behaviour scale takes part.

New environmental paradigm scale; the foundation on which the New Environmental Paradigm Scale that gives the opportunity to make a division between ecocentric and anthropocentric approaches based is the fact, that the humans are no different than other elements forming the nature and the humanity is also subject to the laws of the nature. New Environmental Paradigm Scale is consisted by 15 items in 5 point likert scale type. Scale questions consist from two sub-questions group, which measure the ecocentric and anthropocentric approaches. 1^{st}, 3^{rd}, 5^{th}, 7^{th}, 9^{th}, 13^{th} and 15^{th} questions are the ones that measure ecocentric approaches, as 2^{nd}, 4^{th}, 6^{th}, 8^{th}, 10^{th}, 12^{th}, 14^{th} questions measure anthropocentric approaches. High values obtained from the scale show that while there is an increase of environmental conscience in questions measuring anthropocentric approaches, the environmental conscience in questions measuring the ecocentric approaches have not improved sufficiently. This scale was first developed by Dunlap and Liere (1978), revised by Dunlap et. al. (2000), and adapted to Turkish by Furlan (1998). In this study made by us the Cronbach alpha coefficient of reliability of the scale was calculates as 54.

Environmental Risk Perception Scale: This scale was developed by Slimak and Dietz (2006) and adapted to Turkish by Altunoğlu and Atav (2009); it consists of 23 items in 5 points likert type. In study of Altunoğlu and Atav (2009) it was determined that four factors form the scale and the Cronbach alpha coefficient of reliability of the scale was calculates as 0,89. In our study, the coefficient of reliability was calculated as 93.

Environmental Behaviour Scale: This is a scale, developed by Uzun and Sağlam (2006) and consists of 13 items in 5point likert type. Cronbach alpha coefficient of the scale was indicated as .88. In our study, the Cronbach alpha coefficient of reliability of Environmental Behaviour Scale was found as .85.

2.3. Data Analysis

The analysis of the points obtained from the environmental approaches, environmental risk perceptions and environmental behaviours, arithmetic mean, standard deviation t-test and ANOVA and Pearson Moment Correlation Coefficient was used. The data obtain was analysed in SPSS 16.00 software.

3. Results

Findings of the study that aims to determine the environmental approaches, environmental risk perceptions and environmental behaviours are given below.

Table-1. Arithmetic mean and standard deviation of teacher candidates' environmental approaches, environmental risk perceptions and environmental behaviours

	N	$\overline{X}$	SD
Ecocentric approach	243	4.21	.48
Anthropocentric approach	243	3.35	.90
Environmental risk perceptions	243	4.32	.61
Environmental behaviours	243	3.03	.69

As seen in Table-1, the mean of the teacher candidates' ecocentric approaches = 4.21; mean of the anthropocentric approaches = 4.32 and environmental behaviours = 3.03. Accordingly, it is seen that the mean of teacher candidates' ecocentric approaches are higher than anthropocentric approaches. Additionally, mean of the teacher candidates' environmental risk perceptions are high, while their mean of environmental behaviours is at medium level.

Table-2. t-test results about the ecocentric and anthropocentric approaches, environmental risk perceptions and environmental behaviours that are obtained after examination in regard to gender.

	Gender	N	$\overline{X}$	SS	t	p
Ecocentric approach	Male	131	4.23	.53	.607	.544**
	Female	112	4.19	.40		
Anthropocentric approach	Male	131	3.30	1.04	-.801	.424**
	Female	112	3.40	.70		
Environmental risk perceptions	Male	131	4.25	.72	-1.78	.076**
	Female	112	4.39	.44		
Environmental behaviours	Male	131	2.93	.78	-2.40	.017*
	Female	112	3.15	.55		

* p< 0.05; **p>0.05

As seen in Table-2, the mean of male teacher candidates' ecocentric approaches ($\overline{X}$=4.23) was higher than female teacher candidates ($\overline{X}$=4.19). The mean of female teacher candidates' anthropocentric approaches ($\overline{X}$=3.40), mean of environmental risk perceptions ($\overline{X}$=4.39) and mean of environmental behaviours ($\overline{X}$=3.15); the mean of male teacher candidates' anthropocentric approaches ($\overline{X}$=3.30), mean of environmental risk perceptions ($\overline{X}$=4.25) and mean of environmental behaviours ($\overline{X}$=2.93). It was determined that the ecocentric and anthropocentric approaches, environmental risk perceptions of the

teacher candidates show no meaningful difference in the dimension of gender (p>0.05). In contrary to this, there was a meaningful difference between teacher candidate's environmental behaviours and their gender (p<0.05).

Table-3. Table-2. ANOVA-test results about the ecocentric and anthropocentric approaches, environmental risk perceptions and environmental behaviours that are obtained after examination in regard to teacher candidates' classes where they study.

	Gender	**N**	$\overline{X}$	**SS**	**F**	**p**
Ecocentric approach	2nd Grade	43	4.17	.53	.717	.489**
	3rd Grade	161	4.24	.46		
	4th Grade	39	4.15	.48		
	Total	243	4.21	.48		
Anthropocentric approach	2nd Grade	43	3.03	.92	3.506	.032*
	3rd Grade	161	3.39	.90		
	4th Grade	39	3.51	.79		
	Total	243	3.35	.90		
Environmental risk perceptions	2nd Grade	43	4.30	.52	.185	.831**
	3rd Grade	161	4.31	.66		
	4th Grade	39	4.37	.46		
	Total	243	4.32	.61		
Environmental behaviours	2nd Grade	43	3.09	.75	1.077	3.42**
	3rd Grade	161	2.99	.69		
	4th Grade	39	3.15	.63		
	Total	243	3.03	.69		

* p< 0.05; **p>0.05

As it is seen in Table-3, there is no meaningful difference between teacher candidates' ecocentric approaches, environmental risk perceptions and environmental behaviours in regards to their classes, where they study (p>0.05). However the teacher candidates with anthropocentric approach, show a meaningful difference in regards to their classes (p<0.05).

Table-4. Pearson Moment Correlation Coefficient results about the ecocentric and anthropocentric approaches, environmental risk perceptions and environmental behaviours of teacher candidates.

	Ecocentric approach	Anthropocentric approach	Environmental risk perceptions
Anthropocentric approach	.118*		
Environmental risk perceptions	264*	.410*	
Environmental behaviours	.101**	202*	.343*

* p<0.05; **p>0.05

As seen in Table-4, it is determined that there is a meaningful low-rate relation in positive direction between the ecocentric and anthropocentric approaches of the teacher candidates (r=.118, p<0.05), and a meaningful mid-rate relation in environmental risk perceptions (r=.410, p<0.05) while there isn't any meaningful relation between environmental behaviours (r=.202, p<0.05). While a meaningful low-rate relation in positive direction was found between ecocentric approach and environmental risk perceptions (r=.264, p<0.05), a low-rate but meaningless relation was determined between environmental behaviours (r=.101, p>0.05). A mid-rate relation in positive direction was also found between the environmental perceptions and environmental behaviours (r=.343, p< 0.01).

4. Conclusion and Discussion

In this study of ours, it was determined that the mean of the teachers candidates' ecocentric approaches was higher than anthropocentric approaches, and the risk perceptions of the teacher candidates was high,

while their environmental behaviours was on mid-rate. In similar studies, Sam, Gürsakal and Sam (2010) indicated that the environmental risk perception level of the university students was high and there was a strong relation in positive direction between environmental risk perception and environmental manner. Altunoğlu and Atav (2009) stated that that the environmental awareness level of the secondary education students was high. In this study of ours it was determined that the female teacher candidates' anthropocentric approaches, environmental risk perceptions and environmental behaviour rates were higher than male teacher candidates. Also male teacher candidates' ecocentric approaches were higher than female teacher candidates. In respect of the gender, there was no meaningful difference between the ecocentric and anthropocentric approaches and environmental risk perceptions of the teacher candidates; in contrary to this there was a meaningful difference between the environmental behaviours. Similarly, Sam, Sam and Öngen (2010) indicated in their study, that there was no meaningful difference between ecocentric and anthropocentric approaches and gender, as the study of Silmak and Dietz (2006) shows there was no difference between the environmental risk perceptions and gender. In our study it was determined that there was no meaningful difference between teacher candidates' ecocentric and anthropocentric approaches, environmental risk perception and environmental behaviours in respect of their class variables, where they study. According to the results obtained, while lecturing the teacher candidates about environmental training, considering their environmental approaches, environmental risk perceptions and environmental behaviours will help them to improve a environmental conscience and sensitivity. Thus, it is important to make the students to gain a behaviour change, who is going to be effective on preserving and managing the environment.

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